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# NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

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## MBA PROFESSIONAL REPORT

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**The Effects of Relocation of Yongsan Garrison  
on Labor Cost Sharing**

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**By: David T. Kim,  
Frank T. Skrypak, and  
Francis P. Brown**

**September 2006**

**Advisors: Aruna U. Apte  
Randall B. Howard**

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**THE EFFECTS OF RELOCATION OF YONGSAN GARRISON ON  
LABOR COST SHARING**

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Submitted in partial fulfillment of the requirements for the degree of

**MASTER OF BUSINESS ADMINISTRATION**

from the

**NAVAL POSTGRADUATE SCHOOL  
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# **THE EFFECTS OF RELOCATION OF YONGSAN GARRISON ON LABOR COST SHARING**

## **ABSTRACT**

The objective of this project is to estimate the amount of labor cost sharing (LCS) for both the United States Forces Korea (USFK) and the Republic of Korea government, using a forecasting model. This essential tool will allow leadership in the Korean peninsula to make decisions ahead of time that may prevent demonstrations and mass layoffs affecting the mission and the objective of U.S. presence in the region. With the planned move of Yongsan Garrison from Seoul to the Pyeongtaek region in 2008, there will be a mass consolidation in supporting units. The consolidation will result in reduced need of Korean Nationals (KN) in the region. Although the forecasting model may not result in perfect information, it will give the leadership a better tool to make critical decisions regarding the future of KN employees who are vital to the mission.



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## **LIST OF ABBREVIATIONS**

AF	Air Force
ATFT	Army's Total Force Transformation
CFCOM	Combined Forces Command
DMZ	Demilitarized Zone
DoD	Department of Defense
FYDP	Future Year Defense Plan
GNP	Grand National Party
KN	Korean Nationals
KNEU	Korean National Employees Union
LCS	Labor Cost Sharing
LPP	Land Partnership Plan
PACAF	Pacific Air Force
ROK	Republic of Korea
ROKA	Republic of Korea Army
SMA	Special Measures Agreement
UN	United Nations
USFK	United States Forces Korea
YRP	Yongsan Relocation Plan



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## **I. INTRODUCTION**

### **A. PURPOSE**

The objective of this project is twofold. The first objective is to model and forecast the labor cost sharing amount for both the USFK and the Republic of Korea government. The second objective is to determine the number of Korean National employees needed at Pyeongtaek once Yongsan makes the projected transition to the new post in 2008.

### **B. BACKGROUND**

The United States maintains a multi-year cost-sharing agreement with the Republic of Korea. The most recent agreement expired in 2004. These accords essentially build on past arrangements, and provide for significant and increasing host country participation in cost sharing. This contribution is critical not only for maintaining military readiness of our deployed forces, but also for sustaining the political support that is essential to forward stationing, and thus to our ability to project U.S. power and influence in defense of shared interests.

About 15,000 South Koreans are hired by the U.S. military and 12,000 of them are paid by the Korean government under a cost-sharing program. In early April of 2005, USFK announced that it would cut 1,000 South Korean jobs, citing the Korean government's decision to cut its contributions for the U.S. troop presence in Korea.<sup>1</sup> As progress in cost-share negotiations stagnated, the Korean National Employees Union (KNEU) held many demonstrations at military installations. The contributions from the Korean government are vital to meet all mission objectives within the Korean Peninsula. The commands must be ready to fight every day since the Demilitarized Zone (DMZ) is only 30 miles away from the capital of Korea, Seoul.

The Department of Defense announced on 23 July 2004 that representatives of the Republic of Korea and United States finalized an agreement to relocate all U.S. Forces from the Seoul metropolitan area to the Pyeongtaek area. The agreement fulfilled a

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<sup>1</sup> Jung S. Ki. "USFK to Cut Jobs on Base." Hankook Times. 2006.

commitment made by President George W. Bush and President Roh Moo Hyun at their summit meeting in Washington in May 2003.<sup>2</sup> The relocation of U.S. Forces out of Seoul will be completed by December of 2008. The labor cost sharing arrangements will definitely be affected by the relocation. With the current budget deficit within USFK and Air Force Pacific Command (PACAF), consolidation of many of their supporting elements will be a key cost saving measure. The consolidation will be possible due to the close proximity of the forces. This means that the same number of jobs will not be needed, causing another dilemma around the labor cost-sharing issue. The Korean government is aware of this situation and this may lead to less contribution than in past years.

### **C. RESEARCH QUESTIONS**

The key research questions that will be explored are as follows; With the move of Yongsan south to the Pyeongtaek region, to what extent will the Korean government reduce their share of the labor cost distribution for the 7th AF (Osan and Kunsan)? What method can be used to estimate the LCS distribution? How will the amounts of shared cost affect the end-strength of KN employees at Osan and Kunsan? To what extent will the Pyeongtaek region transform as a result of the relocation? What types of activities and services will be consolidated within the Pyeongtaek region? Will the consolidation affect Korean National end-strength? What will be the relationship between the consolidation efforts and the reduction of US Forces?

### **D. METHODOLOGY**

The methodology used for this research is divided into five steps; review of pertinent literature, collection of data, summarization of material, data analysis through forecasting/simulation, and an assessment/recommendation of the outcome. Review of literature was conducted on the Relocation of Yongsan and LCS. Since the relocation has not yet occurred there were very few literary works to assess in this case. There were however several articles found on LCS which will be used to establish a foundational understanding of the situation and the process. The data was collected from

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<sup>2</sup> Jin S. Han. "Dealing with US Bases." Hankook Times. 2004.

Yongsan Garrison, Osan AB, Kunsan AB, and Daegu. Historical records of LCS funding since its inception in 1991 have been included. The data also contained a theater master plan for the relocation of Yongsan in every aspect such as engineering, environmental areas, funding, and land purchases to name a few. Information has been summarized for content and compiled into relevant data in preparation for analysis. Data has been analyzed to identify the best forecasting figure for the labor cost estimate. A final analysis is provided to assess the best estimate for future labor cost funding.

## **E. ORGANIZATION**

Chapter II will provide key background information on the relocation of Yongsan Garrison and the LCS issue. It describes in detail on how the relocation of Yongsan came into play and summarizes the past conflicts of LCS.

Chapter III will discuss any assumptions that may need to be made due to lack of information and data. This chapter will also analyze the data that was collected on Yongsan Relocation Plan (YRP) and LCS.

Chapter IV will explain the details of the relocation of Yongsan to the Pyeongtaek region and explain the transformation of USFK due to the move. Past military installation moves are compared to the Yongsan relocation. Past examples show the likelihood and shape of the issues that may occur with the transition.

Chapter V will present an analysis of data collected through document reviews. This chapter explains the purpose of the analysis and the methodology by describing the data collection process. Additionally, the best forecasting model based on our research, for estimating the labor cost sharing funding will be identified in this section. We identify different methods such as moving average, weighted moving average, exponential smoothing, and linear regression to predict future LCS amounts.

Chapter VI will be the conclusion of the project. The chapter will provide answers to the research questions, and will identify areas for further research.

## **F. BENEFITS OF STUDY**

This project will give the U.S. leadership in Korea a better tool to assess the LCS amount. By having an estimate of the LCS amount in advance, leadership will be able to

assess how many KN employees will be able to support the US role at each installation. This will help the relocation to occur in an efficient manner that will assure a continuation of a conflict free relationship between both the countries.

## **II. OVERVIEW OF RELOCATION OF YONGSAN/LABOR COST-SHARING**

### **A. PURPOSE**

This chapter gives an overview of how the United States military began its presence in the Korean Peninsula. The chapter also gives an overview of leadership's intent in the region, the alliance between the two nations, and the transformation that is occurring due to restructuring. It discusses the decision to relocate Yongsan from its present location in Seoul to the Pyeongtaek region. Finally, it details how LCS came into existence and discusses the latest problems that have occurred due to conflicts on each side of the table.

### **B. KOREAN WAR BACKGROUND**

On June 30, 1950, North Korean forces crossed the 38<sup>th</sup> parallel with 135,000 troops and attacked South Korea. Within days, the out-numbered and out-gunned South Korean forces were in full retreat. Seoul was captured by the North Koreans on the afternoon of July 3, 1950.<sup>3</sup>

In response to the North Korean actions, President Harry S. Truman ordered General Douglas MacArthur, the Supreme Commander of Allied Forces, to transfer munitions to the Republic of Korea Army (ROKA) and to provide air cover to protect the evacuation of US citizens. Following this initial response, MacArthur then ordered an amphibious invasion at Inchon. United Nations (U.N.) troops landed at Inchon, faced only mild resistance and quickly moved to recapture Seoul. The United Nations troops drove the North Koreans back past the 38<sup>th</sup> parallel. Many in the west, including General MacArthur, thought that spreading the war to China would be necessary. However, Truman and the other leaders disagreed, and MacArthur was ordered to be very cautious when approaching the Chinese border.

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<sup>3</sup> Tah K. Jack. "The Korean War June 1950." Institute of Defense Strategic Studies. 2006. p. 40.



The U.N. forces made the Chinese uncomfortable however, and China began an assault on October 25, 1950.<sup>4</sup> On January 4, 1951, Communist Chinese and North Korean forces recaptured Seoul.<sup>5</sup> MacArthur was succeeded by General Matthew Ridgway, who managed to regroup U.N. forces for an effective counter-offensive. A series of attacks managed to slowly drive back the communist forces. Heavy casualties were inflicted on the Chinese and North Korean units as the Eighth Army advanced several miles north of the 38th parallel.

### **C. CURRENT STATE**

A cease fire was established on July 27, 1953, by which time the front line was back in the proximity of the 38th parallel.<sup>6</sup> The Demilitarized Zone (DMZ) was established on the 38<sup>th</sup> parallel and is still defended today by North Korean troops on one side, and South Korean and American troops on the other.

North Korea has been an enemy of the United States and the ROK for over 50-years. Since, the armistice between the two nations, North Korea has caused a succession of confrontations and clashes with the ROK-US alliance. The sinking of a ROK Navy Patrol Vessel in June of 2002 was the latest of these violent encounters that included assassination attempts on the ROK president.<sup>7</sup>

### **D. PRESIDENTS' INTENT**

2006 marks the 53<sup>rd</sup> anniversary of the Republic of Korea-United States Mutual Defense Treaty and the Armistice Agreement. During a summit meeting in 2004, President George Bush and President Roh Moo Hyun noted the significance of the long standing partnership and highlighted the importance of crafting a relationship for continued peace and prosperity on the Korean Peninsula. Both presidents pledged to increase mutual security cooperation and to modernize the Republic of Korea-United

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<sup>4</sup> Tah K. Jack. p. 43.

<sup>5</sup> Ibid., p. 48.

<sup>6</sup> Ibid., pp. 68-69.

<sup>7</sup> Ibid., p. 70.

States alliance with several initiatives. These initiatives include improving military capabilities, consolidating United States Forces south of the Han River, and relocating United States Forces from the Seoul Metropolitan area.

#### **E. ROK-US ALLIANCE**

The dynamics of the security environment has changed and as our bilateral security relationship continues to adjust, our ROK-US alliance remains committed to its fundamental purpose. The purpose is to deter or defeat North Korean aggression while sustaining a commitment to regional stability. To ensure that the troops have the right capabilities on the peninsula, Combined Forces Command (CFCOM) continues its transformation strategy to enhance, shape, and align the forces in the area.<sup>8</sup> This transformation initiative is intended to optimize the complementary capabilities and combat power that each nation contributes, while designing a stationing blueprint for the United States forces in Korea.

#### **F. TRANSFORMATION**

Shaping combined forces by transferring selected military missions from the United States forces to Republic of Korea forces is currently underway. These changes acknowledge the growing capabilities of the ROK military and its growing role in its own defense, while maintaining a firm U.S. commitment to peninsula security and regional stability. In early 2004, the USFK end-strength was at 37,500 troops. The United States and the Republic of Korea governments agreed to the reduction of 12,500 military personnel from United States Forces Korea over a five-year period, which began in 2004. Per the agreement, USFK has been reduced by 8,000 troops, to include the deployment of the U.S. Second Infantry Division's 2<sup>nd</sup> Brigade Combat Team to Iraq between 2004 and 2005. In 2006, USFK will be reduced by 2,000 more troops, and in 2007 and 2008, an additional 2,500 will be reduced.<sup>9</sup> The authorized end-strength will be left at 25,000 military personnel on the peninsula. These reductions principally affect the Eighth

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<sup>8</sup> Kevin Hawkins. "U.S. Forces Korea Fact Book." Resource Management HQ U.S. Force Korea. 2006. pp. 7-8.

<sup>9</sup> Ibid., p. 8.

United States Army, which will reduce its force while restructuring as part of the Army's Total Force Transformation (ATFT) effort. The Seventh Air Force will also be reduced, but on a much smaller scale.

## **G. ALIGNMENT**

Aligning the majority of United States forces in Korea into two enduring hubs is the final component of the USFK transformation plan. This effort consists of the consolidation of forces, and then their eventual southward relocation away from the Seoul metropolitan area. This shift increases the operational flexibility of the U.S. forces on the peninsula. In 2004, USFK concluded negotiations with the ROK to relocate US forces from the area north of the Han River and from Yongsan Army Garrison. The location to which the forces will move is Camp Humphreys, which is near the city of Pyeongtaek. One key aspect of the agreement is the relocation of the Yongsan Garrison out of Seoul. This shift was initiated at the request, and expense, of the ROK government.<sup>10</sup>

A second aspect of the agreement is the consolidation and realignment of the United States Second Infantry Division south of the Han River. As planned, the Second Infantry Division realignment is occurring in two phases. The first phase consolidates the Second Infantry Division into existing installations, while new facilities are prepared at Camp Humphreys. This consolidation effort is already underway and is progressing as planned. Once construction at Camp Humphreys is complete, actions to relocate the Second Infantry Division into the new facilities will begin. Two sources of funding are necessary for this plan to be executed. The first is the funding of United States military construction projects in Korea. These projects are contained in the Future Years Defense Plan (FYDP). Another important funding source should come from the ROK, as a host nation burden sharing of the construction funds.

## **H. USFK COMMANDER'S INTENT**

General B.B. Bell serves as the senior military member in the Republic of Korea. He is the Commander of the United Nations Command and the United States/Republic of

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<sup>10</sup> Kevin Hawkins. p. 8.

Korea Combined Forces Command, and Commander, USFK. His focus is on the transformation of the Forces in the Korean Peninsula.<sup>11</sup> The transformation efforts will result in units with enhanced deterrence and warfighting capabilities. Transformation will also support a thirty-three percent reduction of United States forces in Korea and a sixty-six percent overall reduction of real estate occupied by U.S. forces.<sup>12</sup> All these efforts provide increased readiness and a less intrusive presence in the region. An additional benefit is a realization of greater economies of scale which in turn generates efficiencies and cost savings. Finally, transformation provides a strategically mobile force capable of dissuading potential threats to the Republic of Korea- United States Alliance and to United States interests in the region of Northeast Asia.

## **I. YONGSAN RELOCATION (YRP)**

In October 2004, the Republic of Korea Minister of National Defense and the Commander of United States Forces Korea signed the Yongsan Relocation Plan Agreement. This agreement was ratified by the Republic of Korean National Assembly in December 2004.<sup>13</sup> According to the terms of this agreement, the headquarters elements of the United Nations Command, Combined Forces Command, and United States Forces Korea will relocate to Camp Humphreys in 2007. All other units currently in Seoul will finish relocating by December 2008. Over ninety percent of Yongsan will be returned to the Republic of Korea with only a small presence of approximately fifty personnel remaining in Seoul. This group will serve as a liaison between the United Nations Command, the Combined Forces Command, the United States Forces Korea, and various ministries and organizations of the government of the Republic of Korea. Additionally, the Dragon Hill Lodge, an Armed Forces Recreation Center for United States Forces Korea service members and their families, will remain in operation.<sup>14</sup>

The alignment of the Eighth United States Army's Second Infantry Division is part of this overall consolidation and relocation plan. The Second Infantry Division's

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<sup>11</sup> Kevin Hawkins. p. 11.

<sup>12</sup> Ibid., pp. 12-13.

<sup>13</sup> USFK. "Yongsan Relocation Plan (YRP)." PowerPoint FOUO. 2006. p. 2.

<sup>14</sup> Ibid., p. 3.

alignment will occur in two phases. The first phase, an extension of the 2002 Land Partnership Plan Agreement, consolidates the Second Infantry Division into existing installations at Camps Casey, Hovey, Red Cloud and Stanley. Once new facilities are prepared the units will relocate south of the Han River, primarily at Camp Humphreys, by 2008.<sup>15</sup> The consolidation phase is currently well ahead of schedule. Thirty-one facilities have been closed, freeing up 11,000 acres that have a tax assessment value of over \$500 million. By the end of calendar year 2008 a total of 50 facilities are planned to be closed, which equates to over 36,000 acres of freed up land.<sup>16</sup> This land, when returned to ROK control, will account for almost two-thirds of the total land granted to United States under the Status of Forces Agreement (SOFA).

## **J. FUNDING**

In accordance with the Yongsan Relocation Agreement, the Republic of Korea will pay most of the costs associated with moving United Nations Command, Combined Forces Command, and United States Forces Korea organizations. Included are the costs of moving equipment, personnel and family members from Yongsan to other installations.

Two sources of sustained funding of United States military construction projects at Camp Humphreys, and Osan and Kunsan Air Bases are crucial to the relocation plan's complex schedule. The U.S. funding contained in the FYDP designated for barracks, dormitories and family housing units, coupled with Republic of Korea host nation funded construction projects will ensure the completion of the plan.<sup>17</sup> Additionally, there are some commercially financed build-to-lease projects that play an important role in the project timeline.

Although the relocation of Yongsan will be funded by the Republic of Korea government, there are many aspects of burden sharing that both the United States and Republic of Korea will participate in bilaterally. The Special Measures Agreement

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<sup>15</sup> Kevin Hawkins. pp. 7-8.

<sup>16</sup> Ibid., pp. 9-10.

<sup>17</sup> Ibid., p. 12

(SMA) was created to negotiate the amounts, terms, exchange rates, and inflation rates used by the two governments in sharing the burden of the stationing costs.<sup>18</sup> Within the SMA is the LCS agreement between the two nations.

## **K. LABOR COST SHARING**

The South Korean government started the labor cost sharing program in 1991 with a contribution of over \$30K to assist in paying Korean National (KN) employees who were working at US military installations throughout the Korean Peninsula.<sup>19</sup> KN employees consist of permanent employees and temporary employees. With factors such as inflation, a rapid growth of the Korean economy and the ever changing military stance in South Korea, the \$30K contribution grew to approximately \$283K by 1996.<sup>20</sup> The labor cost sharing program is under the SMA. The recent SMA expired in 1994 causing uncertainty with the funding amounts. In 1995, there were approximately 15,000 Korean National employees working on US installations. Approximately 12,000 of those KN employees' salaries were paid for by the South Korean government. Due to unexpected cut in labor cost sharing from the South Korean government in 1995, USFK was forced to cut 1,000 South Korean jobs. The South Korean government cited that the funding cut was due to the planned reduction and ongoing restructuring of the U.S. troop force. The allies agreed to cut the number of American soldiers to 25,000 by 2008.<sup>21</sup>

The reduction in labor cost funding forced each military installation on the peninsula to cut temporary jobs, and give permanent employees near retirement age, an early exit. The commanders knew the KN employees were a vital part of the mission and they could ill afford to lose any of them. However, without funding, the leadership did not have a choice. In the meantime, the Korean Employees Union at USFK decided to

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<sup>18</sup> Warren Switzer. "Burdensharing and Special Measures Agreement." PowerPoint FOUO. 2006. p. 2.

<sup>19</sup> Tracy Watkins. "Labor Cost Sharing." Spreadsheet USFK. 2006. p. 1.

<sup>20</sup> Ibid., p. 1.

<sup>21</sup> Jung S. Ki. "USFK to Cut Jobs on Base." Hankook Times. 2006.

hold several demonstrations near military installations venting their anger at the U.S. leadership for letting go of KN employees. The SMA negotiations are currently under intense discussion.

### **III. OVERVIEW OF ASSUMPTIONS**

#### **A. PURPOSE**

This chapter gives an overview of any assumptions that were made due to lack of information or data on both the Labor Cost Sharing program and the Relocation of Yongsan Garrison. All assumptions are based on historical data and recent events that have occurred as the relocation is still an ongoing process.

#### **B. LABOR COST SHARING HISTORICAL DATA**

The LCS program started in 1991 with two payments being made each year. Starting in 2002, the Korean government started making three equal payments throughout the year instead of two payments. The program began with an amount of \$30,745 from the Republic of Korea government and has escalated to the current amount of \$282,900 in 2006. 2005 marked the first year since the inception of the program that the total amount of labor cost sharing has curtailed. The amount of the contribution has decreased in each of the last two years.<sup>22</sup>

#### **C. LABOR COST SHARING ASSUMPTIONS**

With the planned move of Yongsan down to the Pyeongtaek region, it is safe to assume that the end-strength of KN employees will likely be affected by the transition. The change in the end-strength will affect the contribution of labor cost sharing made by the Korean government.

The Korean government has been hinting at lowering the LCS amount because of the planned reduction in forces to 25,000 by 2008. The Korean government's belief is that reduction in US forces will result in less KN employees needed at each installation.

Another assumption is that there will be a considerable number of consolidation projects due to the move of Yongsan Garrison and because Camp Casey is directly next to the future location of Yongsan. Consolidation will mean there will be less employees

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<sup>22</sup> Tracy Watkins. "Labor Cost Sharing." Spreadsheet USFK. 2006. p. 1.



working at the new location. The former employees will either be transferred to other installations or end-strength requirements will be altered to meet new base needs.

Yongsan Garrison is located 30-miles north of the Pyeongtaek region. It is fair to assume that all the employees that worked at Yongsan Garrison will not relocate to the Pyeongtaek region because of the distance. The distance factor might play a major role in number of employees working at new installations. The safety record in Korea is far worse than that in the U.S. High vehicular traffic which leads to high accident rate may prohibit the current employees from traveling those 30-miles. Korea ranked first in number of traffic accidents in the world with 2.5 accidents per kilometer of road followed by Turkey at 0.9 and Japan at 0.8.<sup>23</sup> This predicament may lead to uncertainty in retaining or hiring employees.

Another fair assumption is that KN employees will feel that the on-base military jobs are unstable due to the transition of US role within the Korean peninsula. This transition may make KN employees have second thoughts about job stability and they might look somewhere else for job opportunities. The job market in rest of Korea is lucrative. The Korean economy based on GDP ranks 11<sup>th</sup> in the world.<sup>24</sup> Korea recovered from the Asian Market Crisis and there are many more job opportunities in the private sector than in public sector.<sup>25</sup>

The final assumption is that the USFK and the Korean government will not have a cordial relationship with the Korean Labor Union. This may be due to past labor disputes with USFK and the Korean government's current decision to reduce the LCS amount which forced nearly 1,000 employees to be laid off in April of 2005. Currently, USFK and the Korean Labor Union are trying to mend their relationship with semi-annual meetings to discuss their differences.

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<sup>23</sup> "Korea Road Traffic Safety Association."  
[http://www.who.int/violence\\_injury\\_prevention/resources/reb28/en/](http://www.who.int/violence_injury_prevention/resources/reb28/en/) accessed 2 August 2006.

<sup>24</sup> "World Development Indicator Database.: Worldbank.org. World Bank. 1 July 2006, p. 1.

<sup>25</sup> Sherry Kiser. "Recovery from Financial Crisis: The Case of South Korea." *Economic and Financial Review*. October 2001, p. 8.

All of the above mentioned assumptions are realistic and are critical to the forecasting of future LCS amounts. Most of the assumptions seem to lead towards a reduction of Korean National workers on the payroll. These are necessary assumptions needed to conduct our research.

#### **D. RELOCATION ASSUMPTIONS**

U.S. bases are scattered across South Korea, which increases operational costs. This is especially true with the numerous small camps dispersed throughout Seoul. Their protection, telecommunications, and transportation have become so expensive that plans have been developed to integrate them into a large-scale hub. This transition will include large land procurement and new facility construction. However, our focus is on LCS for USFK and the ROK. Therefore, we do not consider the effects of these procurements and construction on end-strength requirements.

The number of USFK service members and Korean Nationals that support USFK, who will transition from the Yongsan Garrison to the Pyeongtaek region, will represent the actual end-strength requirements of USFK. For this analysis, USFK service members will be defined as United States military personnel assigned to USFK and Korean Nationals will be defined as Korean civilian workers assigned to USFK. Due to the unavailability of data, the requirements for USFK service members, and the requirements for Korean Nationals do not include forces from Republic of Korea Army (ROKA), or Korean Augmentation to United States Army (KATUSA) personnel. We understand that these numbers may affect the number of KN and USFK employees.

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## **IV. USFK/KN TRANSFORMATION**

### **A. PURPOSE**

The purpose of this chapter is to determine how the future stationing of USFK will transform the end strength of the Korean National workforce. Emphasis will be placed on the major installations within the Pyeongtaek region. Additionally, special attention will be given to how the transformation efforts of the Yongsan Garrison relocation will affect this region. This chapter will provide background information and an overview for the planned relocation of USFK. It will also include a forecast for future KN end strength for the Pyeongtaek region as the number of USFK service members is reduced and re-allocated throughout the Korean Peninsula.

### **B. TRANSFORMATION BACKGROUND**

The governments of the Republic of Korea and the United States have agreed to reduce the number of US forces stationed in Korea. This agreement is driven by the Future of the Alliance Policy Initiative and it contributes to the transformation of US installations in Korea and includes the proper alignment of all US forces and its installations. The rationale is to enhance USFK operations within newly formed hubs of enduring installations south of Seoul's Han River. This effort will enable greater command and control of these forces, and maximize the return of land to the Korean Government.<sup>26</sup>

This transformation is to be conducted in two phases. The first phase includes the reduction, reorganization, and consolidation of existing forces targeted for realignment. This phase also initiates the construction of new facilities required for relocation, and is currently underway. Phase two encompasses the actual relocation plan. Execution of this phase is dependent on the completion of facilities needed and leadership decisions from both the Republic of Korea and the United States.

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<sup>26</sup> Foreign Press Center Briefing. (23 July 2004). *Future of the Alliance Policy Initiative*. <http://fpc.state.gov/fpc/34662.htm> accessed 19 July 2006.

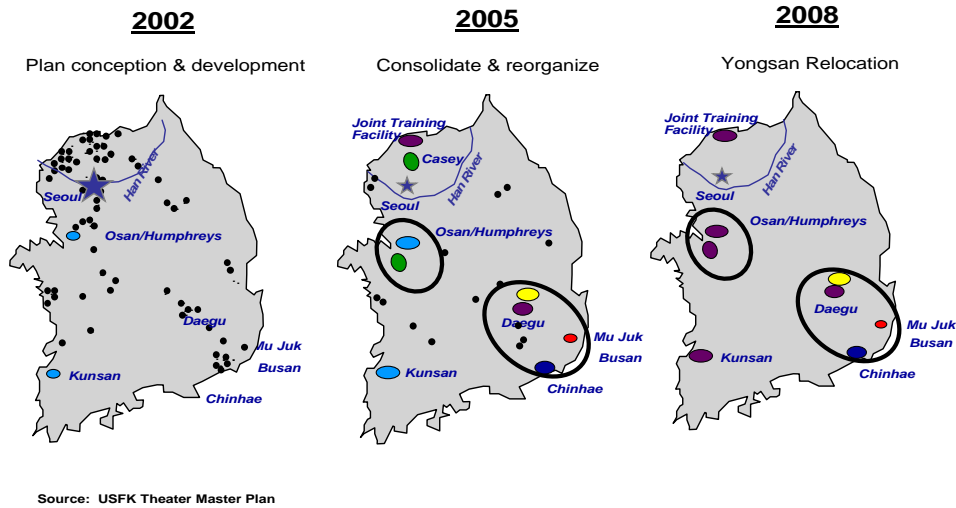


Figure 1. Two Phase Plan

The maps in Figure 1 show how the USFK will transition from many scattered units, to two synergistic hubs. The two hubs are marked in the figure with a dark circle. The Southwest hub will be made up of Osan Air Base and Camp Humphreys. It is important to note that this hub will be located in the Pyeongtaek region, and will include the units relocated from the Yongsan Garrison and metropolitan Seoul. The planned relocation of the Yongsan Garrison will be done in 2008. This effort includes the headquarters elements of the United Nations Command (UNC), Combined Forces Command (CNC), and United States Forces Korea (USFK), who will relocate to Camp Humphreys, near Pyeongtaek, in 2007. All other units at Yongsan will finish relocating by December, 2008.<sup>27</sup>

The Yongsan Relocation Plan (YRP), which is based on the decision to implement USFK force restructuring, is an important document that maps out the future of USFK force restructuring. Originally signed in 1990, the YRP contains the necessary guidance for the relocation of US forces from Seoul. This agreement was executed in

<sup>27</sup> Statement of General Leon J. Laporte: Hearing before the House Appropriations Committee. Subcommittee on Military Quality of Life, Veterans affairs and Related Agencies. 10 March 2005.

part until differences on alternate locations and funding hindered progress. In October 2004, this agreement was re-written and the revised plan was signed by the Republic of Korea Minister of National Defense and the Commander, United States Forces Korea.<sup>28</sup>

The YRP contains several key principles. Most importantly, the relocation must be implemented in accordance with the Status of Forces Agreement (SOFA). Several funding agreements for the relocation have also been outlined in the YRP. The original YRP committed the Republic of Korea to fully fund the movement of USFK units out of central Seoul. At the present time, the Republic of Korea (ROK) is to provide all land, facilities and moving services related to the relocation.<sup>29</sup> The USFK and ROK have agreed to optimize each party's responsibilities through close coordination and efficient planning. All facilities, services, and expenses incurred in implementing the relocation will be validated and paid using procedures to be established by the SOFA Joint Committee. The USFK and ROK may mutually consult and make necessary adjustments to the relocation plan. For example, a significant change in the requirements of USFK facilities and areas in the process of the implementation of the relocation would require an adjustment to the plan. The focus for the United States is to make funding available for sustainment, restoration, and maintenance of enduring facilities while keeping the cost of relocation to a minimum.

The YRP program is expected to total \$3.5 to \$4.5 billion (U.S. dollars), and the program's facility requirements are complex and numerous. These requirements include acquisition of land, high-rise and mid-rise housing units, administrative and headquarters facilities, schools, hospitals, multi-functional facilities, and related infrastructure. It is anticipated that 15 installations will be returned to the ROK and two sites will be partially closed.<sup>30</sup> The YRP also states that the relocation of US forces from Seoul, and

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<sup>28</sup> David Shin, LTC. Asia-Pacific Center for Security Studies. ROK and the United States 2004-2005: Managing Perception Gaps? February 2005.  
<http://www.apcss.org/Publications/SAS/APandtheUS/ShinROK1.pdf> accessed 19 July 2006.

<sup>29</sup> U.S. Government Accountability Office. *Defense Infrastructure: Factors Affecting U.S. Infrastructure Costs Overseas and the Development of Comprehensive Master Plans*. Publication No. GAO-04-609. July 2004. p. 17.

<sup>30</sup> Request for Qualifications. V. 20 March 2006. p. 4.

construction of required facilities will be finalized according to the Status of Forces Agreement (SOFA). Under SOFA, the current schedule for the relocation and construction will extend through 2008.

### **C. USFK SERVICE MEMBER REQUIREMENTS**

The number of USFK troops required to maintain military operations throughout South Korea in 2003 was 37,000. As the plan to consolidate and relocate USFK forces materializes, USFK troop end strength is scheduled to decrease. By 2008, the total number of USFK forces in Korea will be approximately 24,500.

End strength data was collected from the USFK Theatre Master Plan that shows how USFK forces will be stationed throughout South Korea through 2008 and is shown in Table 1. The numbers represent how the USFK service members will be allocated to the future Southwest and Southeast hubs, and Kunsan Air Base, and represent the approximate requirements of USFK. Ratios were developed from these requirements to determine how the required USFK service members will be allocated. Of the total 24,500 service members, the Southwest Hub will require 17,640 service members, or 72%.

Table 1. 2008 USFK Military Stationing

	<b>Requirements</b>	<b>% Allocation</b>
Southwest Hub	17,640	72%
Kunsan AB	2,940	12%
Southeast Hub	3,920	16%
<b>Total</b>	<b>24,500</b>	<b>100%</b>

Since we assume that the number of KN employees required at each hub is driven by the number of USFK service members required, the allocation ratios for the 2008 stationing of USFK service members, shown in Table 1, will also represent how the KN workforce will be allocated, and the same percentages will be used.

#### **D. USFK KOREAN NATIONAL REQUIREMENTS**

It is assumed that the transformation of USFK and the relocation of the Yongsan Garrison down to the Pyeongtaek region will affect the end strength of Korean National employees. The actual change in the end strength will be affected by the level of USFK troop reductions. The following data was collected and analyzed to determine if a relationship exists between the allocations of USFK service members and the number of Korean National employees, and if that relationship is significant enough to predict the number of Korean National employees needed for the support of the installations in the Southwest hub.

Historical (Korean National employees and USFK) troop level data was collected for the years 2000 through 2006 to develop a model that would determine if the number of USFK troops had some effect on the number of Korean Nationals needed for installation support. The data that was used represents the number of USFK service members and KN employees in total, for each year, from 2000 through 2006.

A linear regression model was developed, with the number of KN employees as the dependent variable, and USFK total service members as the independent variable. The intent was twofold. The first intent was to determine if KN national end strength was related to the amount of USFK service members. The second intent was to predict the total number of KN employees needed as a result of the transformation efforts. Since the data used for this model represents the total number of USFK service members and KN employees at the aggregate level; only one regression would be needed to predict the number of KN employees.

The output generated from the model is displayed in Table 2. The output shows that 81% of the variability in the KN data is explained by the level of USFK service member levels. This model also produces strong evidence that a relationship does exist between KN and USFK end strength. This relationship suggests that as the number of USFK service members decreases, the number of KN employees will also decrease.



Table 2. Regression Output

<b>Multiple R</b>	<b>.90</b>
<b>R Square</b>	<b>.81</b>
<b>Adjusted R Square</b>	<b>.78</b>
<b>Standard Error</b>	<b>138.34</b>
<b>Observations</b>	<b>8</b>

	<b>Coefficients</b>	<b>Standard Error</b>	<b>t Stat</b>	<b>P-Value</b>
<b>Intercept</b>	<b>8346.0826</b>	<b>360.8410</b>	<b>23.1295</b>	<b>4.2814</b>
<b>X Variable (USFK Troops)</b>	<b>.0553</b>	<b>.01098</b>	<b>5.0363</b>	<b>.0002</b>

Since we now have established that the relationship between the number of USFK service members and KN workers is significant, we can now use the equation generated by the model to predict the level of KN workers needed, given a certain number of USFK service members. This linear equation, generated by the regression, is constructed for our estimate.

$$Y = 8346.0826 + X (.0553)$$

Where:

Y = the predicted number of KN employees required, in total, for 2008.

X = the number of USFK service members required, in total, for 2008.

Since we already know that the projected number of USFK service members in 2008 is 24,500, this number will represent our X value. Using the equation, the predicted number of total KN employees required (Y), given 24,500 USFK service members, equals approximately 9,701.

Table 3. 2008 KN Stationing

	<b>Requirements</b>	<b>% Allocation</b>
Southwest Hub	6,985	72%
Kunsan AB	1,164	12%
Southeast Hub	1,552	16%
<b>Total</b>	<b>9,701</b>	<b>100%</b>

This table shows the KN stationing requirements for 2008. The total 2008 KN stationing requirement of 9,701 is provided by the regression equation. This number is allocated to Kunsan AB, the Southwest and Southeast Hubs using the same percentages that we used to allocate the USFK service member requirements. Table 4 shows that the Southwest Hub will receive 6,985 KN employees, or, 72% of the total.

Table 4. 2008 USFK & KN Stationing

	<b>USFK Military</b>	<b>KN</b>
Southwest Hub	17,640	6,985
Kunsan AB	2,940	1,164
Southeast Hub	3,920	1552
<b>Total</b>	<b>24,500</b>	<b>9,701</b>

Table 4 shows how the estimated USFK military end strength and total number of KN personnel that will be allocated in 2008. In total, the number of USFK service members will be 24,500. 72% of this total, or 17,640, will be allocated to the Southwest Hub. Likewise, 72% of the 9,701 total KN employees will also be allocated to the Southwest Hub, giving the Southwest Hub 6,985 KN employees.

## **E. AFTER THE TRANSFORMATION**

Clearly, the total size of the forces stationed in the Korean Peninsula, and the foot print caused by old posturing dating back to the Korean War are decreasing. When many of the units dispersed throughout the Korean Peninsula are consolidated, especially in the areas in and around Seoul, the sizes of the proposed enduring hubs will depend on the requirement of USFK service members.

We believe there is a positive correlation between the number of USFK service members, and the number of Korean Nationals required for stationing in 2008. In other words, the total number of required USFK military is directly proportional to the number of KN employees. However, since this statement holds true to the aggregate end-strength in Korea, we must now consider how this relates to the end-strength requirements in the Southwest Hub.

As the relocation efforts of the Yongsan Garrison continue, the USFK will experience a greater concentration of its total end-strength requirements in the Southwest Hub. Explained earlier in this chapter, the concentration of both USKF service members and KN will be 72% of the total end strength. This will have a profound impact on how the future Labor Cost Share (LCS) will be allocated.

## **V. LCS DATA ANALYSIS**

### **A. PURPOSE**

This chapter will present an analysis of Labor Cost Sharing data collected through document reviews and site visits. It will explain the data collection process and the purpose of the analysis. We will describe the methodology and identify the best forecasting model to be used in estimating LCS.

### **B. PURPOSE OF THE ANALYSIS**

The purpose of the project and the analysis is to develop a tool to better predict future LCS amounts and to determine the trend in the end strength of both KN employees and US troops stationed in the ROK. The data used to develop the models and graphs will reveal the decisions made on LCS. The primary decision made will be which country will shoulder the main LCS burden and therefore, what troop levels will be supported by the LCS contributions. The data is also suggestive of the future KN and US troop requirements in the region. The analysis will allow US leadership to have a more in-depth idea of what the future holds, and will provide the leadership with the tools to make informed decisions.

### **C. METHODOLOGY**

Several respected techniques were applied to the data in order to arrive at forecasts and projections. The historical trend of LCS between the Republic of Korea and the United States was analyzed to obtain the forecast for percentage of LCS.

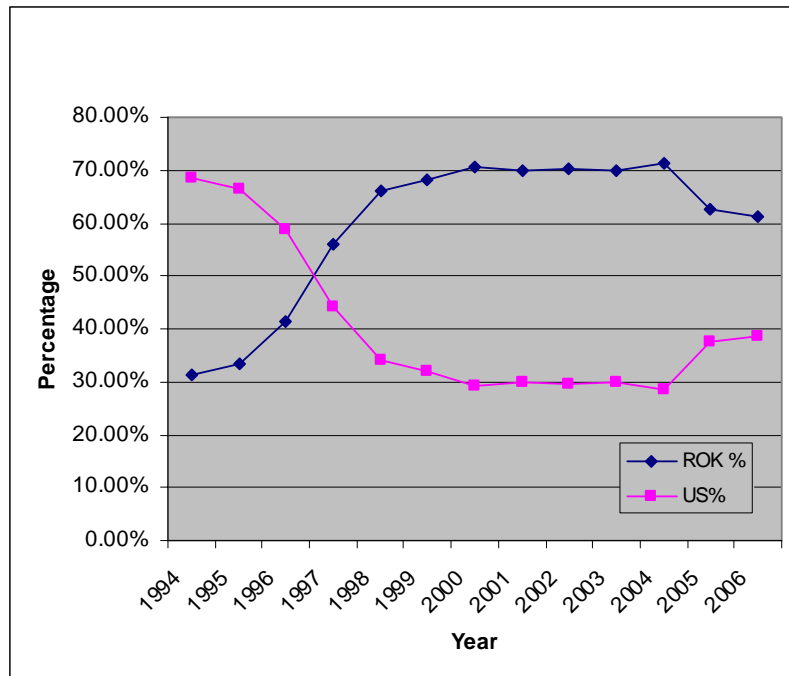


Figure 2. LCS Share

As evidenced by the graph in Figure 2, there was a drastic shift in labor cost sharing between 1996 and 1997. As the strength of the ROK forces increased the two countries agreed that fewer U.S. forces would be needed in the area. This situation created an opportunity for the ROK to shoulder more of the cost burden as it took the lead in security decisions. The recent trend to convergence came about as a result of an ROK decision to provide less money toward the employment of Korean nationals in support of U.S. forces. This move appears to be an attempt to assure its younger population, which is not as pro U.S., that the ROK is moving toward self sufficient defenses.<sup>31</sup>

<sup>31</sup> Park Song Wu. "Korea Can Take Wartime Control Now." Koreatimes.com. 9 August 2006. p. 1.

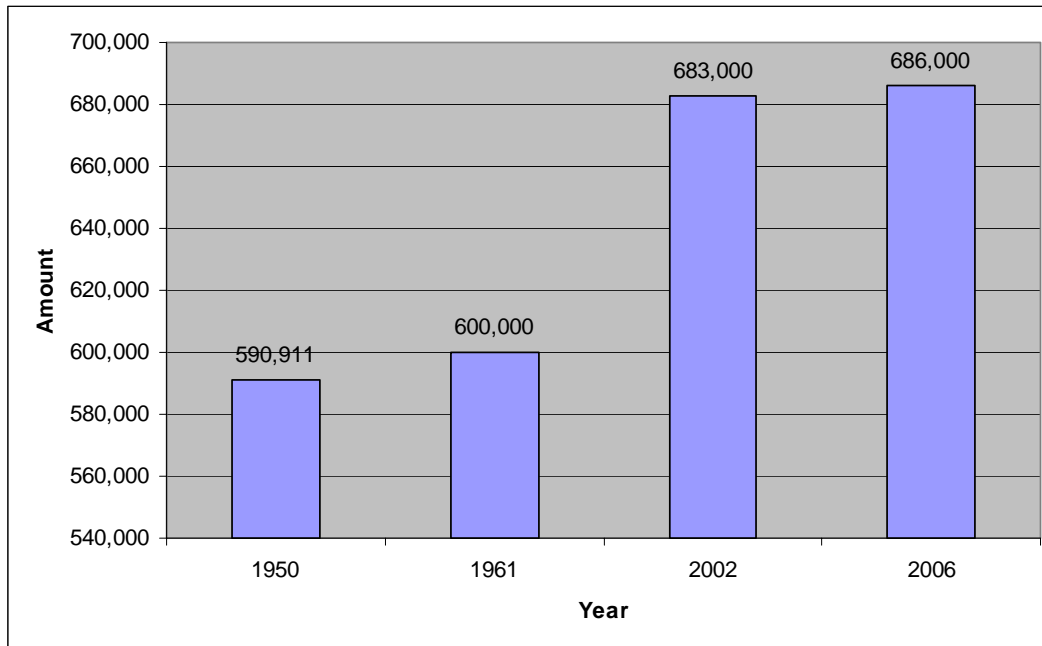


Figure 3. Republic of Korea Military End Strength (1950-2006)

Table 5. Trends in Korean Defense Budgeting (In Billion Korean Won)

Year	1971	1976	1981	1986	1991	1996	1998
Defense Budget	174	442	2,764	4,158	7,524	12,243	14,628

Reasons for the reduction of Labor Cost Sharing by the ROK become clearer when supported by their own military end strength data and defense spending data shown in Figure 3 and Table 5. For 2006 the ROK will have an end strength of 686,000 troops. This large force requires a great deal of dedicated funding, and it is a greater priority for the ROK to fund support of its own troops than the support of U.S. forces.<sup>32</sup>

<sup>32</sup> <http://www.globalsecurity.org/military/world/rok/budget.htm> accessed 14 July 2006.

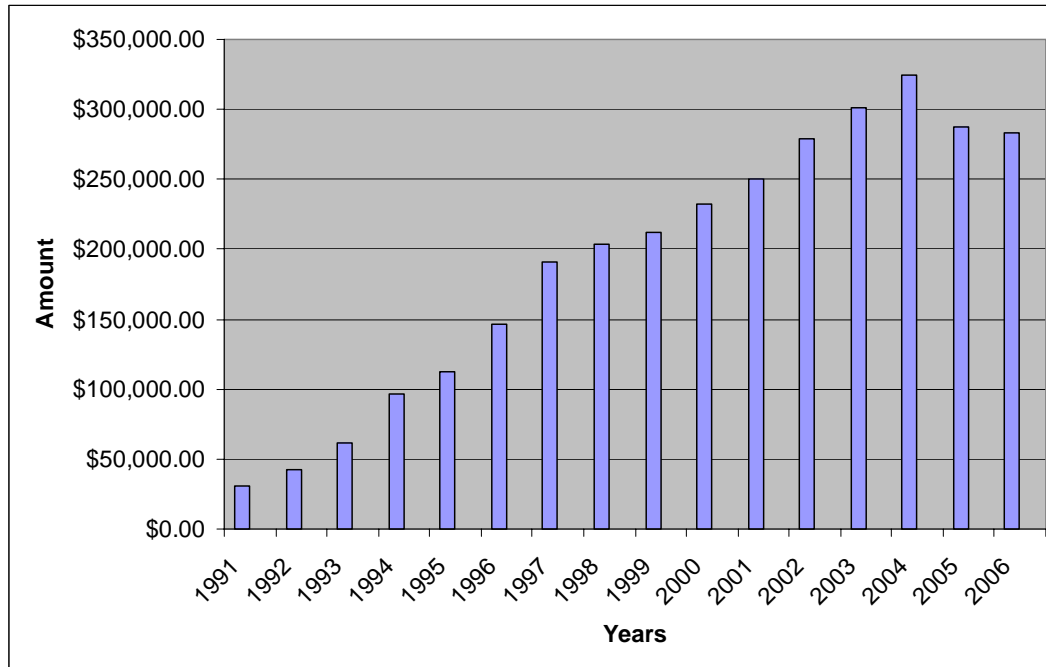


Figure 4. Total LCS Payments By Rep. of Korea (1991-2006)

Data showing the total LCS contributions by the ROK over the last 16 years also contributes to the notion that the ROK will be looking to bolster its own forces while cutting back on LCS funding. As Figure 4 shows, contributions hit an all time high in 2004. It may be due to the increased size of the ROK military which led to reduced funding contributions in 2005 and 2006. We can expect this trend to continue until U.S. force levels bottom out at around the 25,000 troop level within the next few years. The number of required Korean national support personnel will cease its decline and level off. Chapter IV examined what levels of support personnel should be expected. After establishing that this environment is what can be expected for the foreseeable future there were grounds on which the data could be used to make forecasts.

Prior to running the first model, we looked at a simple regression on LCS contribution verses time. Time was selected because it had the best statistical results when compared with other independent variables such as Korean national workforce or troop levels. R Squares for the three options were .94 for time, .64 and .10 for the independent variables of Korean National workforce and troop levels respectively. A summary of the resulting statistics for LCS contribution verses time is listed in Table 6.

The R Square statistic tells us that time explains 94 percent of the variation in LCS amount. The very small P-Value for the X variable indicates that that it is significant at greater than the 99 percent confidence level. The linear equation generated by this regression is as follows:

$$Y = 21727 + 19900(X)$$

where:

Y is the amount of LCS contribution

X is the amount of years past the first data point for which the estimate is desired (i.e. if the estimate for 1995 is desired X would be 4 since the first data point was 1991)

Table 6. Regression Output

<b>Multiple R</b>		<b>.9698</b>		
<b>R Square</b>		<b>.9405</b>		
<b>Adjusted R Square</b>		<b>.9363</b>		
<b>Standard Error</b>		<b>24661.1</b>		
<b>Observations</b>		<b>16</b>		
	<b>Coefficients</b>	<b>Standard Error</b>	<b>t Stat</b>	<b>P-Value</b>
<b>Intercept</b>	<b>21727</b>	<b>12932</b>	<b>1.68</b>	<b>.1151</b>
<b>X Variable (# of Years)</b>	<b>19900</b>	<b>1337</b>	<b>14.88</b>	<b>5.66E-10</b>

The first forecasting model used is the moving average. The moving average uses the results of previous periods to forecast occurrences in the future. The number of periods used in the calculation is denoted by the letter n. Given the total number of data points available in this case, the model was run for n=3 and n=4. The average LCS contribution of the three previous periods and four previous periods, respectively, were used to calculate the forecasts. A benefit to the moving averages technique is that it smoothes out sudden fluctuations in the data but a drawback is the need to collect data for an extended period of time. A large n will generally bring better results when using this model. The graph of the n=4 moving average is shown in Figure 5.



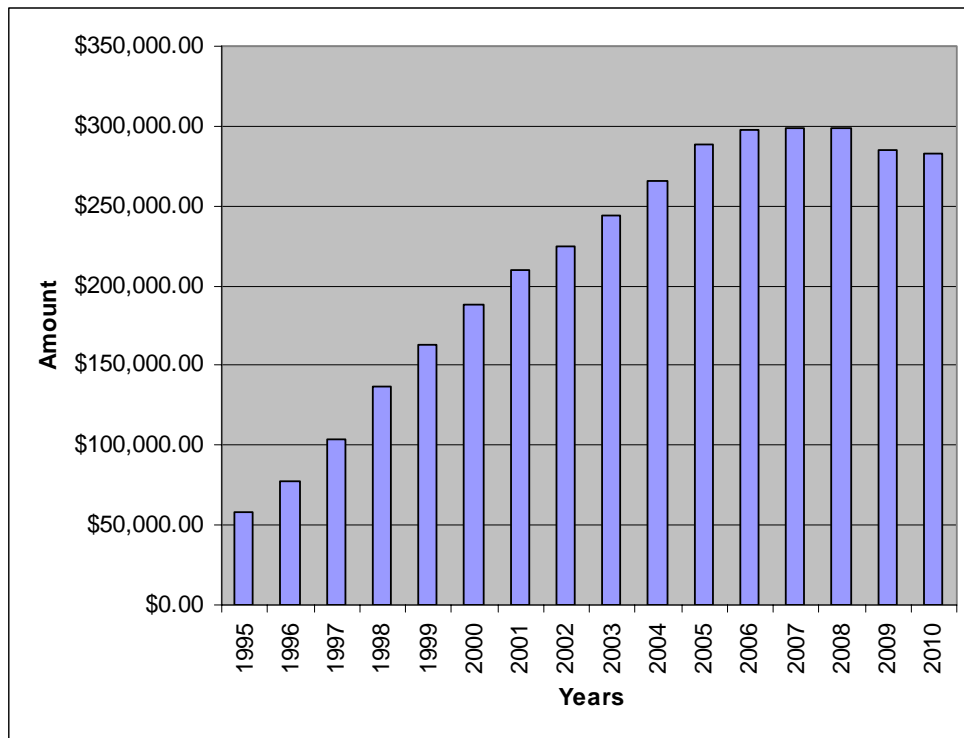


Figure 5. ROK LCS Share as a Moving Average of  $n=4$  (1995-2010)

A key characteristic of a good model is a low forecasting error. This means that the forecasts are close to the observed data points. In comparing the  $n=3$  and  $n=4$  models the  $n=3$  model produced the smallest amount of error. However, the  $n=4$  model produced very close forecasts for 2005 and 2006. In large part this was due to the change in trend from increasing to decreasing LCS contributions by the ROK from 2004 to 2005. By using an extra period of the lower contribution amount the  $n=4$  model dampened the rise in the forecast and therefore came closer to the actual contribution when it began to fall.

The second type of model that was used on the data was a weighted moving average (wma) model. Unlike the regular moving average the wma does not treat all data points equally. This modeling tool uses a weighting system to assign more applicability to certain data. By using weights the analyst recognizes a trend or presence of a specific relationship. In this case two different sets of weights were applied to the data. The first set of weights consisted of .2, .35 and .45. This indicates that the more recent data was

more representative of forecast than older data. For example, 1994 data is weighted by .2, the 1995 data is weighted by .35 and the 1996 is weighted by .45. Assigning weights can be a subjective practice, based on an understanding of the environment or assignment can be based on specific data and information. In this case the application was due to our knowledge of the situation.

Weights Used in WMA Analysis

Weights	Trial 1	Trial 2	Trial 3
W1	0.2	0.3	0.1
W2	0.35	0.4	0.1
W3	0.45	0.3	0.8

Year	Actuals	w.m.a. 1	error	w.m.a. 2	error	w.m.a. 3	error
1991	\$30,745.00						
1992	\$42,050.00						
1993	\$61,600.00						
1994	\$96,000.00	\$48,586.50	\$47,413.50	\$44,523.50	\$51,476.50	\$56,559.50	\$39,440.50
1995	\$112,000.00	\$73,170.00	\$38,830.00	\$66,055.00	\$45,945.00	\$87,165.00	\$24,835.00
1996	\$146,891.25	\$96,320.00	\$50,571.25	\$90,480.00	\$56,411.25	\$105,360.00	\$41,531.25
1997	\$191,000.00	\$124,501.06	\$66,498.94	\$117,667.38	\$73,332.63	\$138,313.00	\$52,687.00
1998	\$203,302.40	\$159,761.94	\$43,540.46	\$149,656.50	\$53,645.90	\$178,689.13	\$24,613.28
1999	\$212,000.00	\$187,714.33	\$24,285.67	\$181,458.10	\$30,541.91	\$196,431.05	\$15,568.96
2000	\$232,600.00	\$204,755.84	\$27,844.16	\$202,220.96	\$30,379.04	\$209,030.24	\$23,569.76
2001	\$250,700.00	\$219,530.48	\$31,169.52	\$215,570.72	\$35,129.28	\$227,610.24	\$23,089.76
2002	\$279,200.00	\$236,625.00	\$42,575.00	\$231,850.00	\$47,350.00	\$245,020.00	\$34,180.00
2003	\$301,500.00	\$259,905.00	\$41,595.00	\$253,820.00	\$47,680.00	\$271,690.00	\$29,810.00
2004	\$324,100.00	\$283,535.00	\$40,565.00	\$277,340.00	\$46,760.00	\$294,190.00	\$29,910.00
2005	\$287,400.00	\$307,210.00	\$19,810.00	\$301,590.00	\$14,190.00	\$317,350.00	\$29,950.00
2006	\$282,900.00	\$303,065.00	\$20,165.00	\$306,310.00	\$23,410.00	\$292,480.00	\$9,580.00
2007		\$292,715.00		\$297,060.00		\$287,470.00	
2008							
MAD			\$38,066.42		\$42,788.58		\$29,135.81
% Error			18%		20%		13%

Figure 6. WMA Application and Results

In this application the first set of weights achieved a better result as the 2006 estimate only deviated from the 2006 actual by 7 percent.

In order to arrive at the optimal set of weights for the forecasting model of weighted moving average optimization was used. Optimization seeks to find the best possible weights to apply to the data to minimize the total amount of error. The two statistics that were selected for minimization were the percent error and the mean absolute deviation (MAD). The MAD is the average of the absolute values of the individual forecast errors, and the percent error is the amount of deviation of the forecasts

from the actual data points. Upon performing the optimization, the combination of 0, 0, 1.0 was suggested as the optimal weighting of the data. What this result recommends is not counting any of the data except the previous period when making a forecast. The reason for this result is captured in two characteristics of the data. The first characteristic is a rapid rise in the amount of LCS contribution over the first thirteen years for which data was available. By taking an average of previous data points the model dampens the increase. The actual situation was quite different than the model over that period. The second characteristic of the data that leads to the suggestion of only considering the previous data point is the drastic change in contribution strategy that takes place between 2004 and 2005. The ROK decreased the amount of contribution at that point, so rather than use previous periods in which an increasing relationship is present, the optimization tool recommends using a point estimate.

The final forecasting method explored is the exponential smoothing model. An advantage in applying exponential smoothing to this data is it does not require extensive record keeping or a large sample size. The technique fits this situation well due to the availability of only a small data set. Exponential smoothing, similar to moving averages, uses a weight to forecast future occurrences. It differs in where the weight is applied. The formula calls for the forecast from the previous period to be adjusted by the variation between the forecast and observed data for that period multiplied by the smoothing constant. The smoothing constant is also referred to as alpha, or the weight. In the application of exponential smoothing to this data set several different smoothing constants were examined. The resulting graph from the constant of .3 is shown in Figure 7. The benefit of this method is that while it lags the actual data, it catches the large change in contribution that occurred from 2004 to 2006. In fact, the 2006 forecast is only off by 2.2 percent from the 2006 observation. Due to the nature of the data as the size of the constant increases the amount of error decreases. The use of optimization on this model, which is discussed next, further reveals the effect of a large smoothing constant on the model.

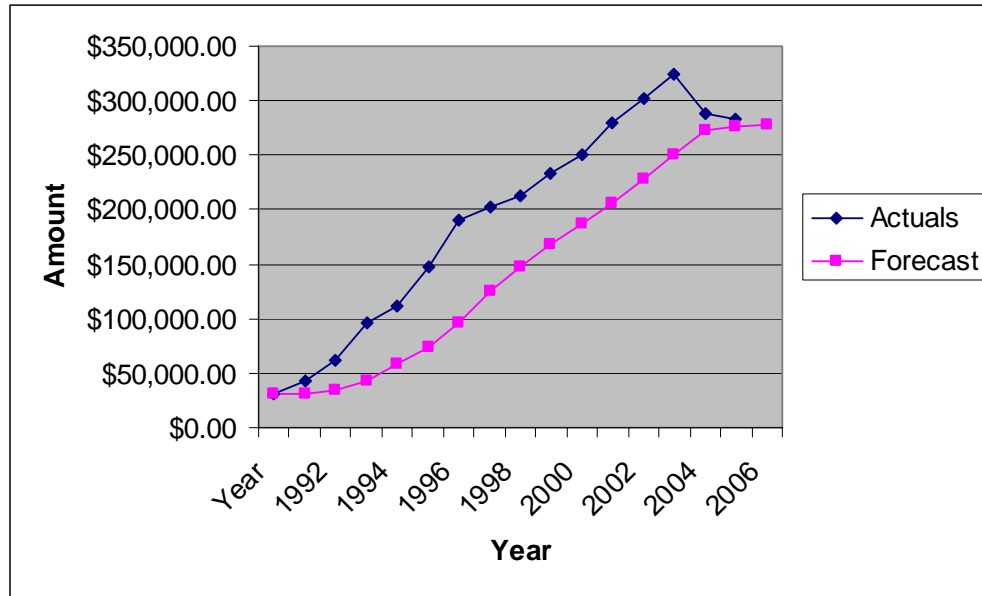


Figure 7. ROK LCS Contributions (Actual vs. Exponential Smoothing Forecast)

The optimization tool applied to the moving weighted moving average model was also applied to the exponential smoothing model. The result was the same as before, and for the same reasons. The optimizer recommended using a smoothing constant of 1.0, which would take the previous forecasts error under complete consideration in making the forecast as opposed to just a percentage of the error. The resultant graph of the optimized exponential smoothing model is shown in Figure 8. The result is that the forecast does not trail the observed data point by nearly as much, and the amount of error contained in the model is greatly reduced.

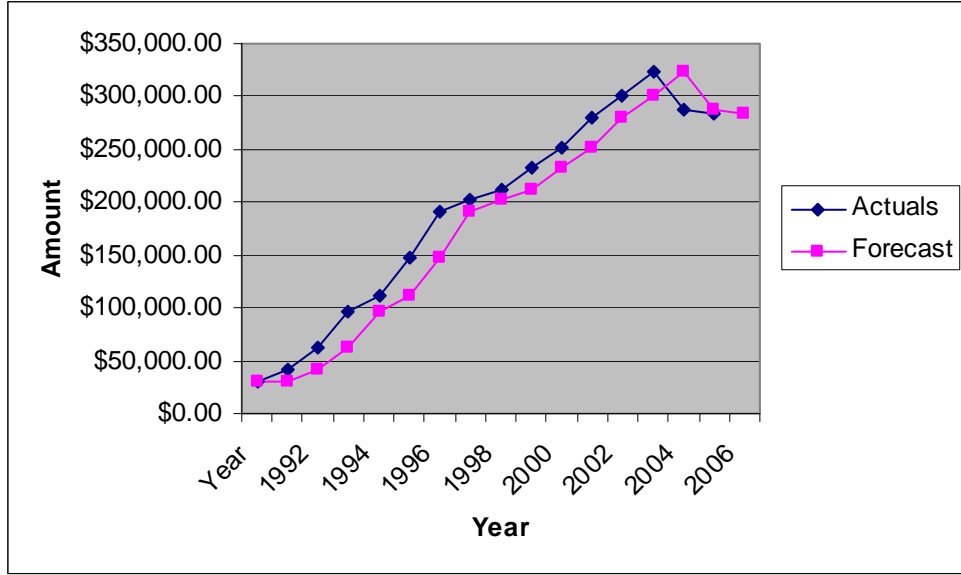


Figure 8. ROK LCS Contributions (Actual vs. Exponential Smoothing Optimization)

#### D. THE PREFERRED MODEL

Given the limited amount of data available and the variation in the contribution amount, we believe that the model that captures the best forecast in recent periods is the weighted moving average model. This model uses three prior periods and weights the values with a .2, .35 and .45 weighting from oldest to most recent. An equation for this model reads as follows:

$$F_{t+1} = W_1 A_{t-2} + W_2 A_{t-1} + W_3 A_t$$

$$F_{t+1} = (0.2) A_{t-2} + (0.35) A_{t-1} + (0.45) A_t$$

Subject to the constraints...

$$W_1 + W_2 + W_3 = 1$$

$$W_1, W_2, W_3 > 0$$

This equation is valid when  $F_{t+1}$  is the forecast for the next period and  $A_t$  is the observed data point for the most recent period. This model weights the most recent data more heavily and still provides a smoothing effect to the data which is valuable given the recent change in the LCS contribution trend. The need for a smoothing effect is the

reason why the optimized models are not preferred for this data. The optimized models recommend only considering the most recent period. While the optimization method reduces the total amount of error in the model it is not useful due to the downturn in ROK contributions. In a more stable situation the optimized exponential smoothing model would be the preferred model.

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## **VI. CONCLUSION AND RECOMMENDATIONS**

### **A. PURPOSE**

The purpose of this chapter is to summarize how the analytical model can help the USFK in the future. The chapter will also cover current issues such as the environmental pollution dilemma and funding problems for the relocation of Yongsan Garrison. The chapter will also cover future issues such as wartime command being returned to the Republic of Korea government and possible reunification of North and South Korea.

### **B. ANALYTICAL FINDINGS**

Historical data used to forecast the future of LCS amounts have shown that LCS amounts are in a downturn, but will soon stabilize once Yongsan Garrison relocates to the Pyeongtaek region. The data shows that USFK end-strength is decreasing while ROK end-strength has steadily increased since the Korean War. The future of U.S. presence in the Korean region varies depending on the success of the reunification of both Koreas. In the mean time, the LCS amount will stabilize once Yongsan's relocation is completed in the near future.

According to the data presented in Chapter V, there is a shift in LCS contribution by both countries. From 1996, ROK contribution has steadily increased while US reduced their contribution. However, starting in 2004, the LCS contributions reverse to a point that the US contributes more than the ROK by 8.8%. This was due to stagnation in the SMA talks. There were several methodologies used to find the best forecasting model. The conclusion is that the weighted moving average offered the best forecast for future LCS amounts based on smaller forecasting error.

### **C. ENVIRONMENTAL ISSUE**

Under a 2004 land swap pact, the U.S. military is required to gradually hand back 170 million square meters of land which constitutes 42 military bases and facilities across the country. The transfer is supposed to be completed by 2011. In return, South Korea



promised the USFK 12 million square meters of land in the Pyeongtaek region to relocate Yongsan Garrison and to expand Camp Humphreys and Osan Air Base.<sup>33</sup>

The environmental issue has recently become a major problem because of the differences between USFK and South Korea over the level of environmental cleanup required at the bases. USFK feels that South Korea is requiring the U.S. side to meet new and more strict environmental standards outside the Status of Forces Agreement (SOFA) between the two nations. USFK has gone above and beyond what is required by SOFA. Most of the failed inspections are from the work completed before the SOFA agreement.

The South Korean government insists that most of the estimated \$500 billion cleanup cost should be paid by the United States.<sup>34</sup> USFK insists that it is obliged to clean only the areas that contain contaminants and are in imminent threat to human health and safety under the SOFA.

#### **D. FUNDING THE RELOCATION**

Both USFK and South Korean governments disagree over the cost of U.S. Base Relocation which can affect the relocation of Yongsan Garrison by 2008. The top U.S. commander in the region estimates that South Korea has to provide \$6.8 billion for the relocation to occur without any problems. The South Korean government which will share the burden of relocating the U.S. installations has thus far only promised to pay \$1.7 billion.<sup>35</sup> The U.S. has decided to contribute \$4.5 billion for the relocation.<sup>36</sup> The two countries are still \$600 million short of the estimated total cost of the move.

The U.S. has asked South Korea to delay drawing up a master plan for the construction of a new, consolidated base in the Pyeongtaek region. The master plan is the key blueprint in deciding the specific construction timetable, design, and size of buildings. Military sources hinted that the delay was caused by the tug-of-war between the two sides over the share of relocations costs.

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<sup>33</sup> Jung S. Ki. "USFK Chief Complains About Stalling in Giving Back Bases." The Korea Times, 2006. p. 2.

<sup>34</sup> Ibid., p. 1.

<sup>35</sup> Jung S. Ki. "ROK, US Differ Over US Base Relocation Costs." The Korea Times, 2006. p. 1.

<sup>36</sup> Jung S. Ki. "US to Fund Up to \$4.5 Bil. For Base Relocation Plan." The Korea Times, 2006. p. 1.

## **E. RETURN OF THE WARTIME COMMAND**

South Korea is expected to completely take back wartime command of its military from the U.S. in 2012. General B.B. Bell, commander of USFK, emphasized that the future of U.S. assistance to the South Korean military would be air and naval centric.<sup>37</sup> South Korea regained peacetime control of its military from the U.S. in 1994, but wartime command has remained in the U.S. hands since the 1950-1953 Korean war.<sup>38</sup>

Recent North Korean missile testing has shown that the South Korean military's intelligence community needs further improvements. Reports have shown that South Korean military authorities received the report of North Korean's test launch of its first short-range Scud missile from the U.S. military nine minutes after the firing was conducted.<sup>39</sup> Conservatives, led by the Main Grand National Party (GNP), have opposed early wartime command transfer, citing Korea's lack of intelligence capabilities.<sup>40</sup> Top U.S. military commanders have also stressed that in order for the South Korean military to assume full wartime command, they need to establish their own War-Fighting headquarter.<sup>41</sup> On 17 August, Korean Defense Minister, Yoon Kwang-un announced that the US would continue to share its intelligence capabilities even after the wartime command transfer.<sup>42</sup>

## **F. HOPEFUL REUNIFICATION**

Most of the citizens in North and South Korea yearn for the day that both Koreas reunite. China and Russia are opposed to the idea of reunification because a reunified Korea will become economically and politically sound and may challenge the neighboring countries. Recent North Korean missile crisis' and nuclear weapons aspirations have drastically isolated North Korea from nations around the world. North

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<sup>37</sup> Song W. Park. "Seoul to Get Back Wartime Command in 5 to 6 Years." The Korea Times, 2006. p. 1.

<sup>38</sup> Ibid., p. 1.

<sup>39</sup> Jung S. Ki. "Transfer of Wartime Command Premature." The Korea Times, 2006. p. 1.

<sup>40</sup> Jung S. Ki. "US to Share Military Intelligence after Command Transfer." The Korea Times, 2006. p. 1.

<sup>41</sup> Song W. Park. "Seoul First Needs Its Own War Fighting HQ." The Korea Times, 2006. p. 1.

<sup>42</sup> Ibid., p. 1.

Korea's missile arsenal currently threatens South Korea and Japan. The Taepo Dong 2 missile which is in development stage could reach Alaska and parts of Hawaii. Experts fear that within 10-15 years a three-stage version could be developed that could deliver a 200-kilogram payload to the continental United States.<sup>43</sup>

These threats and the isolated state of North Korea do not help the reunification talks. The North has postponed several scheduled talks and demanded sanctions be lifted before any talks resume.

The South Korean government does want the presence of USFK to remain in Korea even after the reunification of the two Koreas. However, the North Korea media outlets have criticized presence of the USFK in the South, describing it as a foreign power that threatens world peace and reconciliation of the Korean people.

## **G. RECOMMENDATIONS**

The breakdown in the LCS issue in 2004 resulted in the loss of jobs for KN employees and a breach in the mission due to a lack of personnel needed for operation. The current tense situation between the US and ROK government does not help in the Special Measures Agreement and Labor Cost Sharing negotiations.

The forecasting model shows that the LCS amounts should plateau and stabilize once Yongsan transitions to the Pyeongtaek region. We recommend that the figures be updated yearly and the model be used to assess the amount of future contributions. Although, the model will not result in perfect information, it will give leadership a better tool to make critical decisions regarding the future of KN employees who are vital to the overall mission needs.

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<sup>43</sup> David Ensor. "North Korea Tests Long Range Missile." CNN. 5 July 2006. p. 1.

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